

What Is Claimed Is:

1. A cross-linking compound which comprises:
 - (a) an anhydrous compound liquid at ambient temperature;
 - (b) having at least one element chosen from Group VI-A elements of the periodic table of elements; and
 - (c) a natural or synthetic polymer.
2. A cross-linking compound as set forth in Claim 1 wherein said Group VI-A element is sulfur.
3. A cross-linking compound as set forth in Claim 1 wherein said polymer is a multi-component polymer.
4. A cross-linking compound as set forth in Claim 1 wherein said polymer is saturated.
5. A cross-linking compound as set forth in Claim 1 wherein said polymer contains functional groups.
6. A cross-linking compound as set forth in Claim 1 wherein said polymer is hydroxy terminated polybutadiene.

1 7. A cross-linking compound as set forth in Claim 1 wherein said polymer contains two
2 or more chemical moieties.

1 8. A cross-linking compound as set forth in Claim 7 wherein said polymer is a
2 copolymer of butylene and butene.

1 9. A cross-linking compound as set forth in Claim 1 including aldehyde, phenol, phenol-
2 aldehyde, melamine or epoxy resins.

1 10. A cross-linking compound as set forth in Claim 9 wherein said epoxy resins contains
2 glycidyl moieties.

1 11. A cross-linking compound as set forth in Claim 1 wherein said polymer has a
2 molecular weight less than about 70,000.

1 12. A cross-linking compound which comprises:
2 (a) an anhydrous compound liquid at ambient temperature;
3 (b) molecules or chemical moieties having two or more Group VI-A elements of
4 the periodic table of elements; and
5 (c) a natural or synthetic polymer.

13. A cross-linking compound as set forth in Claim 12 wherein said polymer is a multi-component polymer.

14. A cross-linking compound as set forth in Claim 12 wherein said polymer is saturated.

15. A cross-linking compound as set forth in Claim 12 wherein said polymer contains functional groups.

16. A cross-linking compound as set forth in Claim 15 wherein said polymer is hydroxy terminated polybutadiene.

17. A cross-linking compound as set forth in Claim 12 wherein said polymer contains two or more chemical moieties.

18. A cross-linking compound as set forth in Claim 17 wherein said polymer is a copolymer of butylene and butene.

19. A cross-linking compound as set forth in Claim 12 wherein said Group VI-A elements of the periodic table of elements are in terminal positions on the molecules or chemical moieties.

1 20. A cross-linking compound as set forth in Claim 19 wherein at least one of said Group
2 VI-A elements of the periodic table of elements is sulfur.

1 21. A cross-linking compound as set forth in Claim 20 wherein the molecules or chemical
2 moieties are mercaptans.

1 22. A cross-linking compound as set forth in Claim 12 wherein said Group VI-A
2 elements of the periodic table of elements are not in the terminal position of the molecules or
3 chemical moieties.

1 23. A cross-linking compound as set forth in Claim 22 wherein said Group VI-A
2 elements of the periodic table of elements are poly-element moieties within the molecules or
3 chemical moieties.

1 24. A cross-linking compound as set forth in Claim 23 wherein at least one of said Group
2 VI-A elements is sulfur.

1 25. A cross-linking compound as set forth in Claim 23 wherein the molecules or chemical
2 moieties are Di-tert-butyl polysulfide, Di-tert-dodecyl polysulfide, Di-tert-nonyl polysulfide or
3 combinations thereof.

1 26. A cross-linking compound as set forth in Claim 23 wherein the poly-element moiety
2 is poly-sulfide.

1 27. A cross-linking compound as set forth in Claim 23 including additional cross-linking
2 agents of aldehydes, phenols, phenol-aldehydes, melamine resins or epoxy resins.

1 28. A cross-linking compound as set forth in Claim 23 wherein said epoxy resin contains
2 glycidyl moieties.

1 29. A cross-linking compound as set forth in Claim 28 wherein the glycidyl moiety is
2 neodecanoic acid, oxiranylmethyl ester.

1 30. A cross-linking compound as set forth in Claim 1 including vulcanization accelerators
2 or co-reactant.

1 31. A cross-linking compound as set forth in Claim 30 wherein the accelerator or co-
2 reactant is Tetramethyl Thiuram Disulfide.

1 32. A cross-linking compound as set forth in Claim 30 wherein the accelerator or co-
2 reactant is Tetrabutylthiuram Disulfide.

1 33. A cross-linking compound as set forth in Claim 30 wherein the accelerator or co-
2 reactant is a room temperature accelerator or co-reactant.

1 34. A cross-linking compound as set forth in Claim 30 wherein the accelerator or co-
2 reactant is Dimethyl Cyclohexyl Ammonium Dibutyl Dithiocarbamate.

1 35. A cross-linking compound as set forth in Claim 1 including organic oils or solvents.

1 36. A cross-linking compound as set forth in Claim 35 wherein the organic oils or
2 solvents are derived as a result of components fractionated from crude oil processing.

1 37. A cross-linking compound as set forth in Claim 36 wherein the fractionated
2 components are process oils.

1 38. A cross-linking compound as set forth in Claim 37 wherein the process oils are either
2 aromatic, napthenic or paraffinic or combinations thereof.

1 39. A cross-linking compound as set forth in Claim 35 wherein the organic oils or
2 solvents are derived from natural oils.

1 40. A cross-linking compound as set forth in Claim 39 wherein the natural oils are of
2 either animal or vegetable origin.

1 41. A cross-linking compound as set forth in Claim 39 wherein the oil is of vegetable
2 origin.

1 42. A cross-linking compound as set forth in Claim 35 wherein the organic oils or
2 solvents contain elements of Group V-A of the periodic table of elements.

1 43. A cross-linking compound as set forth in Claim 42 wherein the Group V-A elements
2 contained in said oils or solvents is either phosphorous or nitrogen or both.

1 44. A cross-linking compound as set forth in Claim 43 wherein said oils or solvents
2 containing both phosphorous and nitrogen is lecithin.

1 45. A cross-linking compound as set forth in Claim 1 which includes chemical moieties
2 capable of forming an oxidation-reduction reaction.

1 46. A cross-linking compound as set forth in Claim 45 wherein the chemical moieties
2 capable of forming a oxidation-reduction reaction are iron sulfate and iron chloride.

1 47. A polymer modified asphalt or bitumen which comprises:

2 (a) asphalt or bitumen;

- 3 (b) an anhydrous compound liquid at ambient temperature having at least one
4 element chosen from Group VI-A of the periodic table of elements; and
5 (c) a natural or synthetic polymer.

1 48. A polymer modified asphalt or bitumen as set forth in Claim 47 including aldehyde,
2 phenol, phenol-aldehyde, melamine or epoxy resins.

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